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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHAWAN, SHEELA C

ART UNIT PAPER NUMBER

2624

DATE MAILED: 07/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/799,906	QUALTROUGH ET AL.	
	Examiner	Art Unit	
	Sheela C. Chawan	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 and 27-68 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 9-28, 30-39, 43, 46, 47 and 49-68 is/are rejected.
- 7) ☒ Claim(s) 4-8, 29, 40-42, 44, 45 and 48-52 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/12/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Preliminary Amendment

1. Preliminary amendment filed on 10/13/04 has been entered.

Claims 21-26 are canceled.

Claims 43-68, are added new claims.

Claims 1-20, 27-28,30-68 are pending in the application.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 3/12/04 has been considered by the examiner.

Drawings

4. Drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Fig 4, elements 90-92,93, A, B and 94 A, B are missing. Similarly fig 5 also needs correction for missing elements. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If

the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 31, 37, 43 and 64, are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al., (US. 4,825,068, Listed in IDS filed on 3/12/04).

As to claim 1, Suzuki discloses an article inspection apparatus (abstract) including:

conveying means for conveying an article through an inspection site and rotating (note, the article can be placed on the conveyor at any given position and can provide the automatic supply of articles one after another, column 3, lines 13-16) the article about an axis of rotation when the article is in the inspection site (abstract, column 3, lines 1-3, column 7, lines 17-23);

an imaging system including at least one image capture means (fig 1, element 3, column 7, lines 17- 18), the imaging system arranged so as to view from above over a plurality of separate optical paths an article on the conveying means and all

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components of the imaging system are located separated from the above the conveying means (fig 1, column 7, lines 24- 68, column 8, lines 1- 65); and

an illumination system arranged to illuminate the article on the conveying means from above and from side (fig 14, fig 15, element 9, column 7, lines 15-68, column 8, lines 37-39, fig 4, corresponds to top view).

Regarding claim 31, argument analogous those presented for claim 1 are applicable to claim 31. Regarding a plurality of separate optical paths, as discloses by Suzuki as follow when the article is illuminated, viewing the article from above through a plurality of separate optical paths, using only optical components located separate from and above the article (fig 14).

Regarding claim 37, argument analogous those presented for claim 1 are applicable to claim 37, as discloses by Suzuki an imaging system including at least one image capture device viewing the article through (fig 1) multiple optical paths comprising a first optical path having a first reflecting element to direct light from a first upper view of the article to the image capture device (column 4, lines 35- 46)

and a second optical path having second and third reflecting elements, the second reflecting element receiving light from a second upper view of the article and directing received light to the third reflecting element and the third reflecting element (fig 1, item 57 and 46) directing light to the image capture device (column 4, lines 35- 65,column 5, lines 2-6,26-28);

wherein the first, second and third reflecting elements are positioned separated from and above the conveying device (column 4, lines 35-65,column 5, lines 2-6,26-28).

Regarding claim 43, argument analogous those presented for claim 1 are applicable to claim 43, as discloses by Suzuki an imaging system including an image capture means and a mirror arrangement that defines the field of view of said image capture means (fig 1), characterized in that the imaging system is arranged so that the image capture means has a field of view including a top view and a first upper side view of an article on said conveying means, wherein the components of the imaging system and mirror arrangement are located separated from and above the conveying means (column 7, lines 15-68, column 8, lines 37-39).

Claim 64 is representative of claim 43.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2, 3, 9- 28, 30,32-36,38-39,46,47 and 49-68, are is rejected under 35 U.S.C. 103(a) as being unpatentable over by Suzuki et al., (US. 4,825,068), as applied to the claims 1, 31,37, 43 and 64 above and further in view of Tran et al., (US. 6,944,324 B2).

Suzuki discloses a method and an apparatus for inspecting the appearance of articles, particularly a method and an apparatus for measuring and inspecting the form, size and surface conditions (such as color, damage, surface ruggedness, etc.) of articles, for example, ball like fruits, vegetables or the like, by photographing the articles by means of a sensor camera and processing their pictures so as to sort them by classifying and grading. Suzuki is silent about imaging system includes first and second image capture means that are spaced apart along the direction of travel of the conveying means.

Tran discloses inspection systems and methods and in particular, to a system and method for inspecting packages on a conveyor belt and detecting the presence of overlapped and/or side-by-side packages. The system comprises of:

imaging system includes first (column 3, lines 47- 54), and second image capture means (column 3, lines 47- 54) that are spaced apart along the direction of travel of the conveying (fig 1, element 14) means (column 4, lines 22- 30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Suzuki to include imaging system includes first

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and second image capture means that are spaced apart along the direction of travel of the conveying means. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Suzuki by the teaching of Tran in order to inspect packages on a conveyor belt and detecting the presence of overlapped and /or side-by-side packages (as suggested by Tran at column 1, lines 10-13).

As to claims 3 and 47, Tran discloses the article inspection apparatus including processing means to analyses images received from the first (column 3, lines 47- 54) and second image capture means (column 4, lines 22-30), the processing means analyzing segments of a top view of the article from images captured at different stages of rotation of the article (column 6, lines 10-15, 35- 47), the segments having dimensions so as to substantially avoid any overlap between segments (column 1, lines 27- 52, column 2, lines 20- 32) .

As to claim 9, discloses the article inspection apparatus of wherein the imaging system has a field of view including opposing first and second upper side views of an article located on the conveying means (fig 1, column 7, lines 15-68, column 8, lines 37- 39).

As to claims 10 and 53, Tran discloses the article inspection apparatus including two image capture means and wherein each image capture means receives light via a first and a second optical path (fig 2, item 40a, corresponds to first illumination subsystem, fig 3, item 42b corresponds to second illumination subsystem, column 3, lines 55 – 62, column 4, lines 6- 29), and wherein:

the first optical path includes a single reflecting element that receives

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light from one of said upper side views and directs light received to the image capture means (fig 2, item 40a, corresponds to first illumination subsystem, fig 3, item 42b corresponds to second illumination subsystem, column 3, lines 55 – 62, column 4, lines 6- 29); and

the second optical path includes a first and a second reflecting element, the first reflecting element positioned to receive light from said top view and direct it to the second reflecting element, which redirects the light received to the image capture means, wherein the second reflecting element is located substantially immediately adjacent to said first optical path (fig 2, item 40a, corresponds to first illumination subsystem, fig 3, item 42b corresponds to second illumination subsystem, column 3, lines 55 – 62, column 4, lines 6- 29).

As to claims 11 and 54, Suzuki discloses the article inspection apparatus wherein the image capture means has its optical axis centered on a line that bisects said first and second optical paths (fig 1, column 8, lines 66 through column 9, lines 1-5).

As to claims 12 and 54, Tran discloses the article inspection apparatus wherein the first and second optical paths have substantially equal path length (column 4, lines 22 – 30).

As to claims 13 and 56, Suzuki discloses the article inspection apparatus wherein said conveying means includes two or more lanes (note, fig 2, 24A, 25B, 26C and 27D, corresponds to two or more lanes) for conveying articles past said imaging system and wherein the apparatus includes processing means operable to distinguish in images taken by said first and second image capture means articles in each lane (fig 13).

As to claims 14 and 57, Suzuki discloses an article inspection apparatus including two or more article inspection apparatus located side by side with the respective image capture means of each article inspection apparatus substantially in line with each other (fig13).

As to claims 15 and 58, Suzuki discloses the article inspection apparatus wherein the illumination system includes light sources arranged along both sides of each conveying means equidistant from the conveying means, with the light sources between said conveying means located substantially on a vertical plane that intersects the mid-point between the conveying means (fig 15, item 9).

As to claims 16 and 59, Suzuki discloses the article inspection apparatus wherein said light sources include at least one light source on a first side of a first conveying means located at a height so as to have a clear line of sight to articles on a second conveying means adjacent to the first conveying means on the opposite side from said first side (fig 14).

As to claims 17 and 60, Suzuki discloses the article inspection apparatus wherein the illumination system includes at least one light source located approximately in a horizontal plane from articles when located on said conveying means (fig 15, item 9).

As to claims 18 and 61, Suzuki discloses the article inspection apparatus wherein the at least one light source located approximately in a horizontal plane from articles includes a light source above the equator of the article and a light source below the equator of the article (fig 14, column 9, lines 63-66).

As to claims 19 and 62, Suzuki discloses the article inspection apparatus wherein the light sources are positioned to provide substantially uniform lighting over a spherical surface commensurate with the expected size of articles to be inspected (column 9, lines 16-19, 67-68).

As to claims 20 and 63, Suzuki discloses the article inspection apparatus wherein said one or more lighting sources are fluorescent tubes extending parallel to the conveying means (fig 15, item 9, column 6, lines 15-29).

As to claims 27 and 36, Suzuki discloses the article inspection apparatus wherein the imaging system and illumination system do not share any common optical components (column 5, lines 45-59).

As to claim 28, Suzuki discloses the article inspection apparatus wherein the plurality of separate optical paths has substantially equal optical path lengths (fig 1).

As to claim 30, Suzuki discloses the article inspection apparatus wherein the imaging system has a field of view including a top view of an article located on the conveying means (column 8, lines 37-65, column 9, lines 23-33).

As to claims 32 and 65, Suzuki discloses the method including viewing the article from the top (fig 8 and 10) and from opposing upper side views (column 10, lines 26-37).

As to claims 33 and 66, Suzuki discloses the method, including dividing the total field of view between the top view and upper side views dependent on the shape of articles to be inspected (fig 8 and 10, column 9, lines 16-19, column 10, lines 26-37).

As to claims 34 and 67, Suzuki discloses the method including viewing less of the upper side view and more of the top view when ellipsoidal shaped objects are to be inspected (column 6, lines 3-11, column 9, lines 16-19).

As to claim 35, Suzuki discloses the method, wherein the plurality of separate optical paths has a substantially equal path length (fig 1).

As to claim 38, Suzuki discloses the article inspection apparatus, wherein the imaging system includes an image capture device that views the article through a third optical path having a fourth reflecting element, the fourth reflecting element (fig 1, 46A, 57B and 57D) receiving light from a third upper view of the article and directing received light to the image capture device (column 8, lines 66-68, column 9, lines 1-5).

As to claim 39, Suzuki discloses the article inspection apparatus, wherein the imaging system includes an image capture device that views the article through a fourth optical path having fifth and sixth reflecting elements (fig 1, item 461 and 571), the fifth reflecting element receiving light from a fourth upper view of the article and directing received light to the sixth reflecting element and the sixth reflecting element directing light to the image capture device (fig 1, item 8, 81 and 82).

As to claim 46, Suzuki discloses the article inspection apparatus, wherein the first and second image captures means are spaced apart along the direction of travel of the conveying means (fig 3, item 3 and 31).

As to claim 68, discloses the method analyzing segments of images from said image capture devices, the segments collectively defining the entire top view of the article as it passes through the inspection site substantially without overlap or omission

of portions of the passes surface of the article (fig 4, column 7, lines 33-35, column 8, lines 37-39).

Allowable Subject Matter

7. Claims 4- 8, 29, 40- 42, 44 – 45 and 48 - 52, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Other prior art cited

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Heuft (US. 6,199,679 B1) discloses a device and process for inspection of object, particularly beverage bottles.

Toh (US. 6,141,040) discloses measurement and inspection of leads on integrated circuit packages.

Davis et al., (US. 4,520,702) discloses inspection and cutting apparatus.

Minato (US.5,249,034) discloses method of and apparatus for inspecting end of object for defect.

Asar (US.6,477,266B1) discloses vision comparison inspection system graphical user interface.

Broughton (US. 5,978,500) discloses video imaging system particularly suited for dynamic gear inspection.

Van Amstel et al., (US. 5,170,037) discloses scanning device for optically scanning a surface along a line.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheela C Chawan whose telephone number is. 571-272-7446. The examiner can normally be reached on Monday - Thursday 7.30 - 6.00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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July 6, 2006


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